

IN THE CLAIMS

This listing of claims replaces all prior versions and listings of the claims in the above referenced application.

1. (Currently Amended) A semiconductor light emitting device comprising:
a light emitting region disposed between a cladding region of first conductivity type and a cladding region of second conductivity type;
a contact region of first conductivity type adjacent to the cladding region of first conductivity type;
a contact region of second conductivity type adjacent to the cladding region of second conductivity type; and
at least one heavily doped layer disposed within the cladding region of first conductivity type, wherein the heavily doped layer is more heavily doped than the cladding region of first conductivity type.
2. (Original) The device of claim 1 wherein the light emitting region comprises at least one layer of InGaP.
3. (Original) The device of claim 1 wherein the light emitting region comprises at least one layer of InGaN.
4. (Currently Amended) The device of claim 1 further comprising a plurality of heavily doped layers disposed within the cladding region of first conductivity type.
5. (Currently Amended) The device of claim 4 wherein:
each of the plurality of heavily doped layers is between about 10 nm and about 100 nm thick; and
the plurality of heavily doped layers are separated by at least 10 nm of cladding region of first conductivity type.
6. (Original) The device of claim 4 wherein a total thickness of the plurality of heavily doped layers is between about 100 nm and about 500 nm.
7. (Currently Amended) The device of claim 1 wherein:
the cladding region of first conductivity type has a dopant concentration between about 5×10^{17} and about $1 \times 10^{18} \text{ cm}^{-3}$; and
the heavily doped layer has a dopant concentration between about 1×10^{18} and about $1 \times 10^{19} \text{ cm}^{-3}$.

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8. (Original) The device of claim 1 wherein the heavily doped layer comprises $(\text{Al}_x\text{Ga}_{1-x})_{0.5}\text{In}_{0.5}\text{P}$, where $0 < x \leq 1$.

9. (Original) The device of claim 8 wherein the heavily doped layer comprises $(\text{Al}_x\text{Ga}_{1-x})_{0.5}\text{In}_{0.5}\text{P}$, where $0.2 < x < 0.7$.

10. (Original) The device of claim 8 wherein the heavily doped layer comprises $(\text{Al}_{0.65}\text{Ga}_{0.35})_{0.5}\text{In}_{0.5}\text{P}$.

11. (Original) The device of claim 1 wherein the heavily doped layer comprises $\text{Al}_x\text{In}_y\text{Ga}_z\text{N}$, where $0 < x \leq 1$, $0 < y \leq 1$, and $0 < z \leq 1$.

12. (Original) The device of claim 1 wherein the heavily doped layer comprises GaN.

13. (Currently Amended) The device of claim 1 wherein the heavily doped layer is a first heavily doped layer, the device further comprising a second heavily doped layer disposed within the cladding region of second conductivity type, wherein the second heavily doped layer is more heavily doped than the cladding region of second conductivity type.

14. (Canceled).

15. (Currently Amended) The device claim 14 wherein the heavily doped layer is a first heavily doped layer disposed within the cladding layer region of first conductivity type, the device further comprising a second heavily doped layer disposed within the contact region of first conductivity type, wherein the second heavily doped layer is more heavily doped than the contact region of first conductivity type.

16. (Currently Amended) The device claim 14 wherein the heavily doped layer is a first heavily doped layer disposed within the cladding layer region of first conductivity type, the device further comprising a second heavily doped layer disposed within the contact region of second conductivity type, wherein the second heavily doped layer is more heavily doped than the contact region of second conductivity type.

17. (Currently Amended) A semiconductor light emitting device comprising:
a light emitting region disposed between a cladding region of first conductivity type
and a cladding region of second conductivity type;

a contact region of first conductivity type adjacent to the cladding region of first
conductivity type;

a contact region of second conductivity type adjacent to the cladding region of second
conductivity type;

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at least one heavily doped layer disposed within the contact region of first conductivity type, wherein the heavily doped layer is more heavily doped than the contact region of first conductivity type;

~~The device of claim 1 wherein:~~

~~the region of first conductivity type and the region of second conductivity type are contact regions;~~

~~the contact region of first conductivity type is spaced apart from the active light emitting region by a the cladding region of first conductivity type; and~~

~~the contact region of second conductivity type is spaced apart from the active light emitting region by a the cladding region of second conductivity type.~~

18. (Original) The device of claim 17 the heavily doped layer is a first heavily doped layer disposed within the contact region of first conductivity type, the device further comprising a second heavily doped layer disposed within the contact region of second conductivity type, wherein the second heavily doped layer is more heavily doped than the contact region of second conductivity type.

19. (Currently Amended) The device of claim 1 further comprising:

a first lead electrically connected to the cladding region of first conductivity type;

a second lead electrically connected to the cladding region of second conductivity type; and

a cover disposed over the active light emitting region.

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